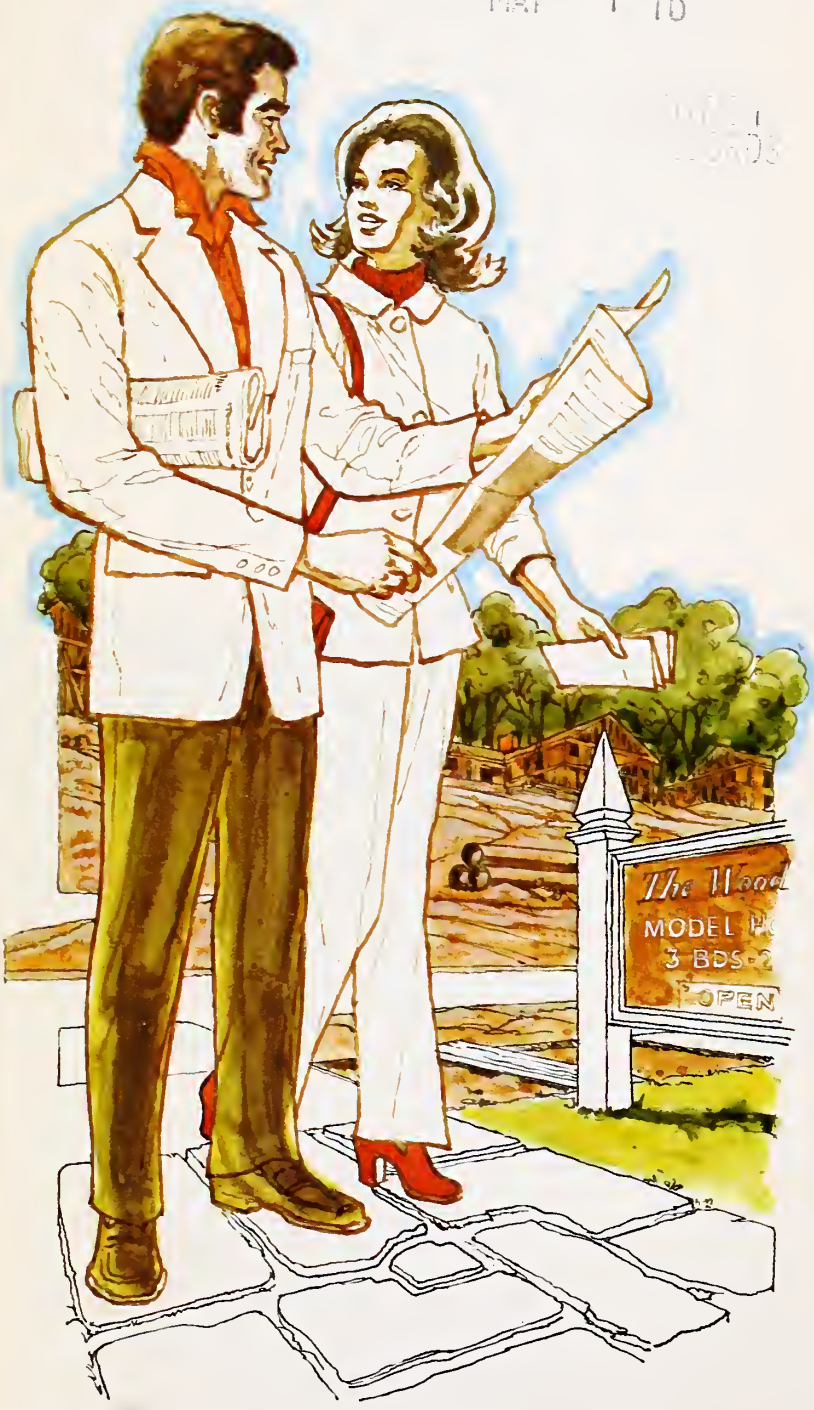
homebuyers

...soil surveys can help you



Soil Conservation Service
U.S. Department of Agriculture

Program Aid No. 1050

HOMEBUYERS

A house or a lot on which you plan to build is a big investment. You can't afford to make mistakes. But unsuspected soil hazards can cause serious damage and lead to major expense. This pamphlet explains how soil surveys available from the Soil Conservation Service can help you answer the following questions about your homesite before you build or buy.

Is Flooding a Hazard?

Many areas now used for houses were used for farms, woodlots, and pasture just a few years ago. Some of these areas are on the flood plain of a stream. The stream may overflow only once in 5 or 10 years, but the chance of eventual damage is high and may get higher as more development takes place in the upstream drainage area. Many people don't realize that even a small creek or stream can become a raging, destructive torrent following prolonged or heavy rains.

In many parts of the country, owners whose homes have been severely damaged by floods were not aware that their homes were built on a flood plain. Because about 5 percent of the land in the United States is on flood plains and much of this land is level and seemingly desirable for homebuilding, a prospective homebuyer should determine whether flooding is a hazard. Soil surveys show the extent of floodprone areas and indicate the hazard of flooding on soils in such areas.

Are There Other Sources of Water Damage?

A seasonally high water table is a hazard in many areas. The water table may be at safe depth most of the year but rise during the wet season. If the water table rises close to the surface, basements may be flooded, septic tank absorption fields may fail, and plants may be damaged or killed. Unfortunately you can't tell about the water table just by walking over the site. Soil surveys indicate whether soils have a seasonally high water table and give the depth to the water table.

Some homebuyers do not realize that their home is in a floodprone area until it is too late.

Erosion is unsightly and may eventually damage this house. Even if the eroding area is stabilized, grass cover will be difficult to establish because the soil is steep.

This house was built on a clayey soil that shrinks and swells severely. As the soil absorbs water it expands. Movement of the soil under the foundation cracked the wall.

Will the House Settle Unevenly or the Walls Crack?

If your house is built on certain kinds of clayey soils, the foundation may shift or settle unevenly, and walls, plaster, and foundation may crack severely. Some clayey soils expand as they absorb water and shrink as they dry. This shrinking and swelling can move a house several inches up and down. Unless the foundation is designed for such stress, it is likely to crack.

A special foundation is required if your house is built on organic soil, such as peat or muck. Even if the house itself remains in place, the soil may settle away from the foundation.

Soil surveys tell whether the soils are organic or mineral. They also give the amount of sand, silt, and clay in each mineral soil and rate the shrinking and swelling potential of clayey soils.

Will a Septic Tank Absorption Field Work?

A septic tank absorption field will be required if your house is located beyond existing sewer lines. An absorption field may not function where there is a high water table, where the soil absorbs the effluent too slowly, or where bedrock is at shallow depth.

Effluent from the drain field may rise to the surface or seep onto areas at lower elevation if the soil absorbs too slowly. If the soil has a seasonally high water table, the absorption field may function in dry weather but fail to absorb effluent during wet periods when the soil is saturated.

Soil surveys give the slope, permeability, degree of wetness, depth to bedrock, depth to water table, and other soil properties that determine whether a septic tank absorption field can be installed safely.

Is Erosion a Hazard?

Generally there is a correlation between steep slopes and erosion caused by rapid runoff of rainwater. But even on less sloping areas, erosion is a hazard if grass and other plants do not grow well enough to protect the soil. Erosion may also be caused by water that flows onto your property from higher areas. Such run-in water may deposit sediment in your yard or driveway, wash out shrubs and vegetation, flood your basement or lawn, and cause gullies. Soil surveys describe soil properties that determine the erodibility of each kind of soil mapped.

Is the Soil Deep Enough?

If the soil is shallow over hard rock, it will be difficult to dig a basement. The soil should be at least 6 feet deep for this purpose. Because trees, shrubs, grass, and flowers grow poorly on most shallow soils, it may be necessary to buy expensive topsoil or use other aids to grow vegetation. Soil surveys indicate areas where bedrock is at depths of less than 5 or 6 feet. They also describe soil properties that affect growth of plants used for landscaping.

Are All Soils More or Less Alike?

Soil scientists have identified tens of thousands of different kinds of soil. Most soils consist of two or three distinct layers. The physical and chemical properties of each of the layers and the great number of combinations of properties explains why there are so many kinds of soil. The average homebuyer doesn't need to know about all the soils, just about the ones his house is on.

Remedies for Soil Hazards

Many soil hazards can be overcome by special structural design or installation. Homeowners who are aware of major soil hazards can take steps to prevent damage rather than incur the likely expense of repairing it. For example, moderate wetness can be

house was built on a soil is subject to slippage. Part of foundation collapsed.

The patchy area marked with stakes shows where septic effluent has seeped to the surface.

Will a Septic Tank Absorption Field Work?

A septic tank absorption field will be required if your house is located beyond existing sewer lines. An absorption field may not function where there is a high water table, where the soil absorbs the effluent too slowly, or where bedrock is at shallow depth.

Effluent from the drain field may rise to the surface or seep onto areas at lower elevation if the soil absorbs too slowly. If the soil has a seasonally high water table, the absorption field may function in dry weather but fail to absorb effluent during wet periods when the soil is saturated.

Soil surveys give the slope, permeability, degree of wetness, depth to bedrock, depth to water table, and other soil properties that determine whether a septic tank absorption field can be installed safely.

Is Erosion a Hazard?

Generally there is a correlation between steep slopes and erosion caused by rapid runoff of rainwater. But even on less sloping areas, erosion is a hazard if grass and other plants do not grow well enough to protect the soil. Erosion may also be caused by water that flows onto your property from higher areas. Such run-in water may deposit sediment in your yard or driveway, wash out shrubs and vegetation, flood your basement or lawn, and cause gullies. Soil surveys describe soil properties that determine the erodibility of each kind of soil mapped.

Is the Soil Deep Enough?

If the soil is shallow over hard rock, it will be difficult to dig a basement. The soil should be at least 6 feet deep for this purpose. Because trees, shrubs, grass, and flowers grow poorly on most shallow soils, it may be necessary to buy expensive topsoil or use other aids to grow vegetation. Soil surveys indicate areas where bedrock is at depths of less than 5 or 6 feet. They also describe soil properties that affect growth of plants used for landscaping.

Are All Soils More or Less Alike?

Soil scientists have identified tens of thousands of different kinds of soil. Most soils consist of two or three distinct layers. The physical and chemical properties of each of the layers and the great number of combinations of properties explains why there are so many kinds of soil. The average homebuyer doesn't need to know about all the soils, just about the ones his house is on.

Remedies for Soil Hazards

Many soil hazards can be overcome by special structural design or installation. Homeowners who are aware of major soil hazards can take steps to prevent damage rather than incur the likely expense of repairing it. For example, moderate wetness can be

reduced by installing subsurface drains. Shrinking and swelling of soil can be overcome by using a foundation designed to withstand such stress. Erosion can be reduced by mulching and establishing vegetation in affected areas. It is best to avoid floodprone areas, but grading to raise the elevation of the house can help reduce the likelihood of flood damage in such areas. The Soil Conservation Service is helping many communities construct flood control structures to protect homeowners in areas where flooding is a hazard.

How to Obtain Information About Soils

Soil surveys of counties throughout the United States are published by the Soil Conservation Service in cooperation with state and other federal agencies. Each survey has maps that show the location of each kind of soil in the survey area. The soils are described and their limitations for many uses are rated. By identifying the soil area in which your prospective homesite is situated, and by reading the description of the soil, you can determine what hazards, if any, may affect the site.

You can call the local office of the Soil Conservation Service to find out whether a soil survey of your area is available. In addition to soil surveys, there are other publications that explain the importance of soils to homebuyers.

Know the Soil You Build On
USDA AIB 320
Soils and Septic Tanks
USDA AIB 349

Issued September 1974

For sale by the Superintendent of Documents
U.S. Government Printing Office, Washington, D.C. 20402
Price 25 cents Stock Number 0100-02913

☆ U.S. GOVERNMENT PRINTING OFFICE : 1975—O-596-864